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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/413,494	10/06/99	BONIN	W B908-002-PAT

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MM91/1222

EXAMINER

DAVIS, O

ART UNIT

PAPER NUMBER

2855

DATE MAILED: 12/22/00

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.
09/413,394

Applicant(s)
Wayne Bonin

Examiner
Octavia Davis

Group Art Unit
2855



- ☐ Responsive to communication(s) filed on _____
- ☐ This action is **FINAL**.
- ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire 3 month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claims

- ☒ Claim(s) 1-40 is/are pending in the application.
- Of the above, claim(s) _____ is/are withdrawn from consideration.
- ☐ Claim(s) _____ is/are allowed.
- ☒ Claim(s) 1-24 and 33-40 is/are rejected.
- ☒ Claim(s) 25-32 is/are objected to.
- ☐ Claims _____ are subject to restriction or election requirement.

Application Papers

- ☒ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.
- ☐ The drawing(s) filed on _____ is/are objected to by the Examiner.
- ☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.
- ☐ The specification is objected to by the Examiner.
- ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

- ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
- ☐ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been
- ☐ received.
- ☐ received in Application No. (Series Code/Serial Number) _____.
- ☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____

- ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

- ☒ Notice of References Cited, PTO-892
- ☒ Information Disclosure Statement(s), PTO-1449, Paper No(s). 2
- ☐ Interview Summary, PTO-413
- ☒ Notice of Draftsperson's Patent Drawing Review, PTO-948
- ☐ Notice of Informal Patent Application, PTO-152

— SEE OFFICE ACTION ON THE FOLLOWING PAGES —

Serial Number: 09/413, 494

Art Unit: 2855

12/15/00

DETAILED ACTION

Information Disclosure Statement

The information disclosure statement filed January 10, 2000 fails to comply with 37 CFR 1.98(a)(2), which requires a full legible copy of each U.S. and foreign patent; each publication or that portion which caused it to be listed; and all other information or that portion which caused it to be listed. It has been placed in the application file, but the information referred to therein has not been considered.

Claim Objections

Claims 25 - 32 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claims, or amend the claims to place the claims in proper dependent form, or rewrite the claims in independent form. Accordingly, these claims have not been further treated on the merits.

Claims 5, 34 and 36 are objected to because of the following informalities: In CL 5, line 8, delete " a ". In CL 34, line 1, insert commas after " end " and " means ". In CL 36, line 2, insert a comma after " faces ".

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1 - 24 and 33 - 40 are rejected under 35 U.S.C. 112, 2nd paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The following lack antecedent basis: In CL 1, line 8, "said center electrode". In CL 4, lines 1 and 2, "electrode" and "the same plane". In CL 9, lines 3 - 17, "the total number", "the active main channel", "the pickup plate", "the time period", "the corresponding drive plate" and "the next channel". In CLS 10 - 12, lines 1, "said foil electrode". In CL 20, line 2, "the output". In CL 21, lines 4 - 8, "the Z-axis output", "the X-axis output", "the difference" and "the Y-axis output". In CL 22, lines 3 - 6, "the amplitude of the drive plate", "the pickup electrode", "the induced voltage" and "the displacement". In CL 23, line 2, "the outputs". In CL 24, lines 5 - 9, "the difference", "the X-axis output" and "the Y-axis output". In CL 33, lines 5 - 10, "the proper length", "the load stem", "the head slider", "the disk", "the slider suspension", "the plane" and "the force". In CL 35, lines 1 and 2, "the spacers" and "the fixed end". In CL 36, lines 9 - 17, "the active main

channel ", " the signal ", " the time period ", " the corresponding drive plate " and " the next channel ". In CL 38, line 2, " the outputs ". In CL 39, lines 3 - 5, " the amplitude " and " the induced voltage ". In CL 40, line 2, " the outputs ".

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1 - 24 and 33 - 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bonin (1235) in view of Sikorra. Bonin (1235) discloses a precision multi-dimensional capacitive transducer comprising a sensor element 2 having a plurality of transducers 4, 6 functioning as two variable capacitors and form a capacitive voltage divider, a plurality of layers 8 forming the transducers, each layer including drive or fixed plates of electrically conductive material, a pickup plate 122 (See Fig. 2), the plates disposed on opposing sides of the pickup plate and a center electrode 20 (See Fig. 2), means for supporting the drive plates, spring supporting means engaging and supporting the center plate, the support springs comprising planar

springs, the pickup plate containing six faces, the faces grouped into three pairs, the two faces within each pair being parallel with each other and orthogonal with each of the faces of another two pair (cls 1, 3, 4, 5, 7, 8, 35 and 37), the drive plates comprising a plurality of plates (cls 2 and 6), the central plate 20 comprising high strength beryllium copper alloy (cl 10), the electrode and the support springs being formed from a single sheet of foil by photochemical etching, the copper foil having a range of thickness (cls 9, 11, 12 and 18), the drive plates comprising an electroconductive material disposed on an aluminum oxide substrate, the electroconductive material comprising pure copper (cls 13 and 14), the center electrode comprising a material having a thermal expansion coefficient similar to aluminum oxide (cl 15), the center electrode material being a metallic element (cl 16), the transducer comprising first and second spacer means 10, 14 disposed between the lower and upper drive plates and the electrode (cl 17), the transducer including electrical circuit means 100 for applying electrical drive pulses to the drive plates, the pulses having a frequency, a pulse width of approximately $1/F$ divided by a total number of drive plates, the drive pulses being grouped into one main channel per operative drive plates, each main channel consisting of two sub-channel pulses, one sub-channel pulse operative on each drive plate, the main channels being multiplexed to apply said pulses to the drive plates with the main channels being spaced apart in time by the pulse width, the two sub-channel signals being applied simultaneously to

the drive plate pair, sampling means for demodulating the signal on the pickup plate into one channel per drive plate pair, timing means 110, 112 for controlling the sampling means such that each first sub channel is sampled during the time period that the drive pulse is applied to the corresponding drive plate and each second sub-channel is sampled after the drive pulse has ended, storage means for each sub-channel and differential amplifier means to convert each of the two sub-channel signals into main channel signals (cls 19, 21, 24 and 37), the main channel signals generated by the differential amplifier means constituting outputs of the transducer (cl 20), each of the main channel signals connected to feedback circuit means 166 which produces feedback signals which control the amplitude of the drive plate pulses in response to displacement of the pickup electrode (cls 22 and 39), the feedback signals constituting the outputs of the transducer 131 (cls 23, 38 and 40), the spring end being wider than the main portion of the spring and extending a distance (cl 34), the spacers and the center electrode structure including additional support means about a fixed end of the spring (cl 35) (See Cols. 10 - 15, 25 and 26, lines 56 - 68, 41 - 63, 25 - 56, 43 - 56, 20 - 36, 27 - 56, 40 - 65 and 31 - 65) (cls 1 - 24 and 34 - 40) but does not disclose means for moving a disk relative to a slider in one direction in the plane of the disk and means for applying a normal force between the slider and the disk, and means for recording and displaying the normal force (cl 33). However, Sikorra discloses a dual capacitance type transducer comprising a capacitive transducer 11 comprising support


elements 13, 15, the support elements being in the form of discs and having recesses 17, 19, the recesses defining support surfaces 18, 20, a diaphragm supported between the support surfaces, the diaphragm being movable in response to a reference pressure and pressure to be measured (See Figs. 1 and 2) (See Cols. 2 - 3, lines 31 - 68 and 49 - 68).

Therefore, it would be obvious to one of ordinary skill in the art at the time the invention was made to modify Bonin (1235) according to the teachings of Sikorra for the purpose of, providing a capacitive transducer providing accurate static and dynamic pressure measurements in a specific environment.

Any inquiry concerning this communication should be directed to Examiner Octavia Davis at telephone number (703) 306 - 5896.

JD

OD/2855


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